

Audit Report



PREPARATION OF THE AIR FORCE SEGMENTS OF THE
JOINT SURVEILLANCE TARGET ATTACK RADAR SYSTEM
FOR THE YEAR 2000

Report No. 99-148

May 5, 1999

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Acronyms

JSTARS
Y2K

Joint Surveillance Target Attack Radar System
Year 2000



INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
400 ARMY NAVY DRIVE
ARLINGTON, VIRGINIA 22202

May 05, 1999

MEMORANDUM FOR ASSISTANT SECRETARY OF THE AIR FORCE
(FINANCIAL MANAGEMENT AND COMPTROLLER)

SUBJECT: Audit Report on Preparation of the Air Force Segments of the Joint
Surveillance Target Attack Radar System for the Year 2000
(Report No. 99-148)

We are providing this report for your information and use. This report is one in a series of reports being issued by the Inspector General, DoD, in accordance with an informal partnership with the Chief Information Officer, DoD, to monitor DoD efforts to address the year 2000 computing challenge.

This report contains no findings or recommendations, no written comments were required, and none were received. Therefore, we are publishing this report in final form.

We appreciate the courtesies extended to the audit staff. Questions on the audit should be directed to Mr. Charles M. Santoni at (703) 604-9051 (DSN 664-9051) (csantoni@dodig.osd.mil) or Mr. Sean Mitchell at (703) 604-9034 (DSN 664-9034) (smitchell@dodig.osd.mil). See Appendix B for the report distribution. The audit team members are listed inside the back cover.

A handwritten signature in black ink, reading "Robert J. Lieberman", is positioned above the printed name.

Robert J. Lieberman
Assistant Inspector General
for Auditing

Office of the Inspector General, DoD

Report No. 99-148

(Project No 8AL-0041)

May 05, 1999

Preparation of the Air Force Segments of the Joint Surveillance Target Attack Radar System for the Year 2000

Executive Summary

Introduction. This report is one in a series of reports being issued by the Inspector General, DoD, in accordance with an informal partnership with the Chief Information Officer, DoD, to monitor DoD efforts to address the year 2000 computing challenge. This report addresses the year 2000 issues that pertain to the Air Force segments of the Joint Surveillance Target Attack Radar System. The Air Force segments include an airborne platform equipped with radar, operations and control, data processing, and communications subsystems; a ground support system; and an integrated maintenance information system. The Army is responsible for the common ground station module, an intelligence-gathering facility that processes and disseminates information received from the airborne platform.

Objectives. Our overall audit objective was to determine whether planning and management activities are adequate to ensure that the Air Force segments of the Joint Surveillance Target Attack Radar System will operate effectively in the year 2000. Specifically, the audit determined whether the process used for the Air Force segments of the Joint Surveillance Target Attack Radar System complied with the guidance in the DoD Year 2000 Management Plan.

Results. The Joint Surveillance Target Attack Radar System Program Office effectively managed year 2000 issues for the Air Force segments of the Joint Surveillance Target Attack Radar System. As a result, we have reasonable assurance that those segments would be able to carry out their mission and properly process date-dependent information before, during, and after January 1, 2000. The Joint Surveillance Target Attack Radar System Program Office initiated actions to ensure that Air Force contracts and solicitations for the Joint Surveillance Target Attack Radar System include year 2000 compliance language and maintained adequate documentation to support the Air Force Year 2000 compliance certification process.

Management Comments. We provided a draft of this report April 9, 1999. Because the draft report contained no or recommendations, written comments were not required, and none were received. Therefore, we are publishing the report in final form.

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Background

Because of a potential for computers to fail to run or function properly throughout the Government beginning January 1, 2000, the President issued an Executive Order, "Year 2000 Conversion," February 4, 1998. The Executive Order makes it policy that Federal agencies ensure that no critical Federal program experiences disruption because of the year 2000 (Y2K) problem and that the head of each agency ensures that efforts to address the Y2K problem receive the highest priority attention in the agency.

DoD Y2K Management Plan. The DoD Y2K Management Plan makes the DoD Components responsible for implementing the five-phase Y2K management process, which it describes. The target completion date for implementation of mission-critical systems was December 31, 1998.

Y2K Implications for DoD Weapon Systems. DoD weapon systems are becoming increasingly advanced through the extensive use of computers and software. The development and acquisition of software, information technology systems, and software embedded in weapon systems that accommodate the century change are essential to future mission effectiveness. The weapons systems include smart munitions, missiles, armored vehicles, ships, aircraft, communications, and navigation systems.

Air Force Y2K Strategy. The Air Force follows a centralized management - decentralized execution approach to solving its Y2K problem. The Air Force Chief Information Officer has overall responsibility for the Air Force Y2K effort, but each Major Command plans and manages its respective Y2K effort. Command field units are responsible for Y2K compliance and certification of their respective unit. Each system program office is responsible for correcting Y2K problems on the system under its purview. Each system is tracked through the same Y2K five-phase process that is specified in the DoD Y2K Management Plan (awareness, assessment, renovation, validation, and implementation). Also, each phase has a DoD target completion date. Specific exit criteria had been established and were to be accomplished before a system could progress to the next phase of the process. System progress is tracked through system manager input into the Air Force Automated Systems Inventory, a database managed by the Air Force Y2K Program Management Office. The Air Force uses a two-phase certification approach to support Y2K compliance certification. Phase I begins at the awareness phase and ends with the completion of the validation phase and certifications by the program manager and a General Officer/Senior Executive Service member that, to the best of their knowledge, the system meets all Y2K compliance requirements. The Air Force Y2K Program Management Office receives the certification and assigns a certification control number to the system.

At that point, Phase II (implementation phase) begins and ends when the modified system is successfully implemented in a production environment. Successful implementation results in the system being officially designated as Y2K compliant.

Objectives

The overall audit objective was to determine whether the Y2K planning and management activities of the Joint Surveillance Target Attack Radar System (JSTARS) Program Office are adequate to ensure that the Air Force segments of JSTARS will operate effectively in the year 2000. Specifically, the audit determined whether the process used for the Air Force segments of JSTARS complied with the guidance in the DoD Y2K Management Plan. See Appendix A for a discussion of the scope, methodology, and prior audit coverage.

Status of the Air Force Segments of the Joint Surveillance Target Attack Radar System Year 2000 Program

The JSTARS Program Office effectively planned and managed Y2K issues for the Air Force segments of JSTARS to provide reasonable assurance that those segments would be able to carry out their mission and properly process date-dependent information before, during, and after January 1, 2000. On November 23, 1998, the Air Force certified that JSTARS had completed Phase I of the certification process. However, the JSTARS Program Office did not meet the target date of December 31, 1998, for completion of Phase II, the implementation phase. The estimated completion date for the implementation phase was June 28, 1999. All required documentation and certification checklists were prepared and maintained to support Y2K certification. Also, the system's Y2K status was correctly reported in the Air Force Automated Systems Inventory database.

System Description

JSTARS is a long-range surveillance, battle-management, and target attack support system designed to detect, locate, classify, and track moving and stationary ground targets in all weather conditions. The JSTARS radar can detect, classify, and process target-position data in near-real time for reception at multiple ground locations. JSTARS is a joint Air Force and Army acquisition program with the Air Force designated as the lead Military Department. The JSTARS system consists of an airborne platform equipped with radar, operations and control, data processing, and communications subsystems; a ground support system; a JSTARS integrated maintenance information system; and Army common ground station modules equipped with communications and data processing subsystems. For program management, the Air Force is responsible for the airborne platform, the ground support system, and the JSTARS integrated maintenance information system. The Army is responsible for the Army common ground station module, an intelligence-gathering facility that processes and disseminates information received from the airborne platform. This audit examined the Air Force segments of the overall JSTARS.

Y2K Program Management

The JSTARS Program Office actively planned and managed Y2K issues to ensure that the Air Force segments of JSTARS would operate effectively in the year 2000. As of February 1, 1999, the Air Force segments were in the implementation phase. Implementation was scheduled to be completed in June 1999, and we have reasonable assurance that the Air Force segments of JSTARS would be able to carry out their mission and effectively process date-dependent information in the year 2000.

Y2K Certification. Using the Air Force two-phase certification approach, the JSTARS Program Director and the Air Force Program Executive Officer for Warning Surveillance and Control Programs certified that the Air Force

segments of the JSTARS had successfully completed the Phase I awareness, assessment, renovation, and validation phases and that the Air Force had taken all necessary and reasonable actions to ensure that JSTARS would properly process date-dependent information before, during, and after January 1, 2000. JSTARS management successfully developed and tested software remedies to correct the Y2K deficiencies identified in the Air Force segments of JSTARS. However, JSTARS had not completed Phase II implementation, which results in the system being designated as Y2K compliant. JSTARS did not meet the December 31, 1998, date for completion of the implementation phase because the Y2K remedies were combined with a planned major JSTARS software upgrade. Although the software upgrade was unrelated to the Y2K effort, the JSTARS Program Office decided to combine the Y2K remedies with the software upgrade as a cost-effective approach to resolving the Y2K issues. The Government officially accepted delivery of the software upgrade on December 30, 1998. The Program Office stated that the overall risk was low for installing the software upgrade into the production JSTARS airborne platform. The estimated completion date for the implementation phase was June 28, 1999. Despite the delay, we believe that the Program Office effectively planned and managed its Y2K activities to provide reasonable assurance that the Air Force segments of the JSTARS would be able to carry out their mission and properly process date-dependent information before, during, and after January 1, 2000.

Management Plans. The JSTARS Program Office prepared and updated its Y2K Program Management Plan to describe its management approach, the current status of the JSTARS Y2K program, and how Y2K compliance certification would be achieved. The Program Office used both the DoD and Air Force-wide five-phase management approach to solving the Y2K problem. The Program Office also prepared and maintained an updated Y2K contingency plan. We used the Y2K contingency plan guidance, issued by the Office of the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) to evaluate the JSTARS Y2K contingency plan. The contingency plan did not address the risk associated with alternative strategies for noncompliant systems, the impact of the alternative strategies, or the effects on users if Y2K problems occurred. JSTARS Program Office personnel made appropriate changes to the contingency plan, and those changes addressed the issues that we brought to their attention.

Air Force Y2K Compliance Checklists. The JSTARS Program Office used the Air Force Y2K Compliance Checklist and Air Force Materiel Command Weapon System Y2K Compliance Checklist to provide reasonable assurance that JSTARS is Y2K compliant. The checklists contain the necessary steps to ensure that systems and their interfaces had been analyzed and tested for Y2K compliance. The Program Office obtained certified Y2K compliance checklists for all systems, subsystems, and support items associated with the Air Force segments of the JSTARS. All issues resulting from the Y2K testing were documented in the checklist, and remedies or acceptable workarounds were devised. The Program Office submitted a Weapon System Y2K Compliance Certification, signed by the JSTARS Program Director, and a General Officer Signature Sheet for Y2K System Certification, signed by the Air Force Program Executive Officer for Warning Surveillance and Control Programs, to the Air Force Y2K Program Management Office. The Air Force Y2K Program Management Office agreed that the Air Force segments of the JSTARS had

successfully completed the awareness, assessment, renovation, and validation phases and assigned the system a certification control number.

Contract Language. The JSTARS Program Office assessed all JSTARS contracts and modified any contracts, as needed, to address Y2K requirements and to ensure Y2K compliance. All contracts that provide entryways into the JSTARS baseline, such as block upgrades and annual releases, were modified to include Y2K requirements language. The Program Office stated that it was not procuring any noncompliant Y2K information technology items.

Interfaces. The Program Office executed interface control documents or memorandums of agreement for all JSTARS external and internal interfaces. The interface control documents and memorandums of agreement were recorded in the Air Force Automated Systems Inventory database.

Y2K Testing. The contractor prepared a Y2K test plan for the Air Force segments of JSTARS. The test plan identified the components to be examined and the process to be used to analyze and test each component in accordance with the Air Force Y2K checklist. System-level tests were completed for the airborne platform, ground support system, and integrated maintenance information system. Documentation was maintained to support the tests performed and the contractor's conclusion that the JSTARS software upgrade, including the Y2K remedies, is Y2K compliant. The Defense Contract Management Command witnessed the contractor system integration tests for the software upgrade.

The JSTARS Joint Test Force conducted independent Y2K tests of the JSTARS navigation, radar, and tracking functions and found them to be Y2K compliant.

Reporting. The Program Office accurately reported the status of JSTARS in the Air Force Automated Systems Inventory database. We found no discrepancies between the information reported in the database and the source documentation that the Program Office maintained.

Appendix A. Audit Process

This report is one in a series of reports being issued by the Inspector General, DoD, in accordance with an informal partnership with the Chief Information Officer, DoD, to monitor DoD efforts to address the Y2K computing challenge. For a listing of audit projects addressing this issue, see the Y2K webpage on IGnet at <<http://www.ignet.gov>>.

Scope

We evaluated the planning and management for the Air Force segments of the JSTARS Y2K program. We compared the JSTARS Program Office efforts with the DoD Y2K Management Plan and Air Force guidance, and we conducted discussions with Program Office officials and evaluated Y2K documentation, where available, to obtain reasonable assurance that the JSTARS would properly process date-dependent information before, during, and after January 1, 2000.

DoD-Wide Corporate-Level Government Performance and Results Act Goals. In response to the Government Performance and Results Act, the Department of Defense has established 6 DoD-wide corporate-level performance objectives and 14 goals for meeting these objectives. This report pertains to achievement of the following objective and goal.

Objective: Prepare now for an uncertain future. **Goal:** Pursue a focused modernization effort that maintains U.S. qualitative superiority in key warfighting capabilities. (DoD-3)

DoD Functional Area Reform Goals. Most major DoD functional areas have also established performance improvement reform objectives and goals. This report pertains to achievement of the following functional area objectives and goals.

Information Technology Management Functional Area.

- **Objective:** Become a mission partner. **Goal:** Serve mission information-users as customers. (ITM-1.2)
- **Objective:** Provide services that satisfy customer information needs. **Goal:** Upgrade technology base. (ITM-2.3)

General Accounting Office High-Risk Area. The General Accounting Office has identified several high-risk areas in DoD. This report provides coverage of the Defense Weapons Systems Acquisition Information Management and Technology high-risk area.

Methodology

To determine the adequacy of the Air Force planning and management of the JSTARS Y2K program, we reviewed the DoD Y2K Management Plan, the JSTARS Y2K Program Management Plan, the JSTARS Contingency Plan for Year 2000 Related Issues, the Air Force Weapon System Y2K Compliance Certification, the Air Force Year 2000 Compliance Checklists, the JSTARS external and internal interface agreements, JSTARS contracts, the prime contractor test plan and test documentation, Government test documentation, and the Air Force Automated System Inventory database printout for JSTARS. Using the proscribed guidance, we compared the Y2K program performance with the established requirements.

Use of Computer-Processed Data. We did not use computer-processed data to perform this audit.

Audit Type, Dates, and Standards. We performed this economy and efficiency audit from October 1998 through February 1999, in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD.

Contacts During the Audit. We visited or contacted individuals and organizations within the DoD. Further details are available upon request.

Management Control Program. The audit scope was limited in that we did not review the management control program because DoD recognized the Y2K computing problem as a material management control weakness area in the FY 1998 Annual Statement of Assurance.

Summary of Prior Coverage

The General Accounting Office and the Inspector General, DoD, have conducted multiple reviews related to Y2K issues. No reports specifically concerning the JSTARS system have been issued. General Accounting Office reports can be accessed over the Internet at <http://www.gao.gov>. Inspector General, DoD, reports can be accessed over the Internet at <http://www.dodig.osd.mil>.

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Assistant Secretary of Defense (Public Affairs)

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Chief Information Officer, Army
Inspector General, Department of the Army
Auditor General, Department of the Army

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Inspector General, Department of the Navy
Auditor General, Department of the Navy

Department of the Air Force

Assistant Secretary of the Air Force (Financial Management and Comptroller)
Program Executive Officer for Warning Surveillance and Control Programs
System Program Director, Joint Surveillance Target Attack Radar System
Chief Information Officer, Department of the Air Force
Inspector General, Department of the Air Force
Auditor General, Department of the Air Force

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Senate Committee on Governmental Affairs
Senate Special Committee on the Year 2000 Technology Problem
House Committee on Appropriations
House Subcommittee on Defense, Committee on Appropriations
House Committee on Armed Services
House Committee on Government Reform
House Subcommittee on Government Management, Information, and Technology,
Committee on Government Reform
House Subcommittee on National Security, Veterans Affairs, and International
Relations, Committee on Government Reform
House Subcommittee on Technology, Committee on Science

Audit Team Members

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